Minor in Applied Energy

The Minor in Applied Energy is open for engineering, architecture, and science undergraduate students who are interested in the energy domain and in renewable energy applications. Students in professional careers in energy, environment, and sustainable applications in buildings and energy systems would find this minor useful.

The objective of the Minor in Applied Energy is to provide the student with an effective understanding of renewable energy resources and their utilization to face the environmental challenges. The program will also emphasize the integrative use of renewable energy technologies with conventional energy systems to increase dependence on clean energy. The students shall acquire skills needed to practice and influence advanced energy systems design to benefit the society economically and environmentally.

The minor covers topics related to energy sources and their optimal use, design of energy efficient and environmentally sustainable buildings, the integration of renewable energy technologies with conventional energy systems to reduce energy consumption, energy economic policy, and regulatory frameworks within which decisions on sustainable energy utilization practices are made.

The Applied Energy Minor has two components. The first is a core that provides an integrated perspective on energy science/technology foundation. The second component is a customized program of electives and lab that is selected by each student in close consultation with his or her Applied Energy Minor faculty advisors.

A minor in applied is offered by the ME Department. The student is required to complete 20 credits from the list given below of required courses (9 credits), elective courses (9 credits), and lab course (2 credits) to fulfill the minor requirements.

Required Core Courses (9 credits)

- MECH 310 Thermodynamics I 3 cr.
- EECE 675 or MECH 671 3 cr.
  - EECE 675 Renewable Energy Systems
- MECH 673 Energy Efficient Building with Good Indoor Environment 3 cr.
- ECON 333 MECH 674 Energy Economics and Policy 3 cr.

Lab Courses (2 credits)

- MECH 670 Laboratory for Renewable Energy in Buildings (2 credits)
- MECH 770 HVAC and Refrigeration Systems Lab (2 credits)
- MECH 679 Energy Audit Lab (2 credits)
Elective Courses (Maximum of 9 credits)

- ECON 333 MECH 674 Energy Economics and Policy 3 cr.
- MECH 510 Design of Thermal Systems 3 cr.
- MECH 513 Air conditioning 3 cr.
- MECH 604 Solar Energy 3 cr.
- MECH 675 Building Energy Management Systems 3 cr.
- MECH 771 HVAC Systems Control Strategies and Energy Efficiency 3 cr.
- MECH 772 Moisture and Control of Humidity Inside Buildings 3 cr.
- MECH 676 Passive Building Design 3cr.
- MECH 677 Heat pumps 3cr.
- MECH 678 Solar Electricity 3cr.
- MECH 773 Numerical Method in Energy Technology 3cr.
- EECE 660 System Analysis and Design 3 cr.
- EECE 670 Power System Planning 3 cr.
- EECE 671 Environmental Aspects of Power Systems 3 cr.
- EECE 672 Energy Planning and Policy 3 cr.

Human Resources

The courses for the minor are selected from a set of existing courses. Many are offered on annual basis. There will be no additional FTE’s required for completion of the minor. Note that mechanical, electrical, and chemical engineering faculty members shall contribute to this minor.

Facilities

Renewable Energy Lab (SRB 4th floor) of the ME department will be used. No additional space is needed.
AMERICAN UNIVERSITY OF BEIRUT
FACULTY OF ENGINEERING AND ARCHITECTURE
MECHANICAL ENGINEERING DEPARTMENT

Application For a Minor in Applied Energy

Term: ___________________________  Academic Year: ______________

Student’s Information:
Name: ___________________________  ID#: ____________________________
Major: ___________________________  Box#: ____________________________
Email: ___________________________  Phone: ____________________________
Graduation Date ( month / year ) ______________

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Registered Courses

a. Required Core Courses (9cr.):

1. Fundamental Energy Science Course:
   MECH 310(3cr.) or CIVE 340(3cr.) or CHEM 217(3cr.)
   ________________________________________________

2. Energy Technologies Course: EECE 675(3cr.)
   ________________________________________________

3. Energy Management and Economy Course: ECON 333(3cr.)
   ________________________________________________

b. Elective Courses (11cr.): The student must take a minimum of five credits from list A and a minimum of three credits from List B.

List A             List B
   4.______________________________   7.______________________________
   5.______________________________   8.______________________________
   6.______________________________   9.______________________________

Date: _______________  Advisor Name ____________________________

Signature ____________________________